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**Patentanmeldung Nr.    Patent application No.    Demande de brevet n°**

00203659.8

Der Präsident des Europäischen Patentamts;  
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets  
p.o.

**I.L.C. HATTEN-HECKMAN**

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**Blatt 2 der Bescheinigung**  
**Sheet 2 of the certificate**  
**Page 2 de l'attestation**

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Applicant(s):  
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Arrangement for distributing content

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# Arrangement for distributing content

The invention relates to an arrangement for distributing watermarked content to a receiver.

5 In accordance with the invention, a content owner can embed audio watermarks in his audio content, or in the audio portions of his audiovisual content. These watermarks preferably contain metadata related to e-commerce, such as a Uniform Resource Identifier. The content owner then arranges for an audio signal representing the audio content to be transmitted, for example by broadcasting it, to a consumer. The consumer can retrieve  
10 and use the metadata by using his mobile device as a receiver for the audio signal, and then detecting the watermark from the received audio signal and processing the metadata comprised therein.

Alternatively to watermark detection in the mobile phone, the watermark detection may be done in a central processing server in the mobile network. The mobile  
15 phone in that case is only used to carry the audio from the pickup point to the central processing server.

An advantage of this approach is that a content owner and a mobile phone vendor, or the content owner and a mobile phone operator, can work out various watermarking-based e-commerce business models without any involvement of the  
20 broadcaster, network operator or the manufacturer of the CE appliance. This provides true disintermediation.

These and other aspects of the invention will be apparent from and elucidated  
25 with reference to the embodiments shown in the drawing, in which:

Figure 1 schematically shows a first embodiment of the arrangement according to the invention; and

Figure 2 schematically shows a second embodiment of the arrangement.

Throughout the figures, same reference numerals indicate similar or corresponding features. Some of the features indicated in the drawings are typically implemented in software, and as such represent software entities, such as software modules or objects.

Figure 1 schematically shows an arrangement 100 comprising a transmitting arrangement 110 and a receiving arrangement 130. The transmitting arrangement 110 comprises determining module 111, generating module 112, embedding module 113, watermarking module 114 and output module 115. The transmitting arrangement 110 is, in accordance with the invention, arranged to transmit content 116 to the receiving arrangement 130. The content 116 should have extra information embedded into it before it is transmitted. The determining module 111 determines the extra information to be inserted by means of a watermark. Any type of extra information can be embedded in this fashion. Some examples will be given below. The content 116 is for instance a television program, a radio program, a movie, an advertisement, a picture or a sound or a portion thereof.

The generating module 112 receives a selection of the content 116 and generates a signal representing the content 116. The content 116 may need to be read from a storage unit 117. This storage can be a tape or a disk such as a DVD or Video CD. It can also be received from an external source, such as the Internet, a satellite feed or home network.

The embedding module 113 generates a watermark in which the extra information is embedded. This watermark is to be communicated to the receiving arrangement 130 together with the content 116, so preferably the watermark is generated based on the content 116 or its representation. The extra information may need to be embedded in a synchronized fashion with the activity in the content 116, so that they will be synchronized with this activity as well. In other situations, the extra information may need to be processed or used at particular points in time. In those situations, the expected rendering times of the content 116 should be known so that the extra information can be embedded at the corresponding locations in the representation.

The watermarking module 114 generates the watermarked signal 120 comprising the signal representing the content 116 and the watermark signal, using any kind of watermarking or other steganographic technique appropriate for the content 116. The output module 115 then outputs the watermarked signal 120, preferably as an audio signal.

The receiving arrangement 130 comprises receiving module 131, decoding module 132 and executing module 133. The receiving module 131 receives the signal 120

and feeds it to the decoding module 131. The receiving module 131 can be for instance a microphone, a camera or a light sensitive sensor of some kind.

The decoding module 131 obtains the content 116 from the signal 120. Typically receiving and decoding comprises converting the signal 120 back into a representation similar to the one used in the transmitting arrangement 110. The decoding module 131 then processes the content 116 to obtain the extra information

The transmitting arrangement 110 can be realized as a computer program product 140 being arranged for causing a processor to execute the method described above. The computer program product 140 enables a programmable device when executing said computer program product to function as the transmitting arrangement 110. Similarly, the receiving arrangement 130 can be realized as a computer program product 141 enabling a programmable device when executing said computer program product to function as the receiving arrangement 130.

The above description gives a general overview of the functionality of distributing watermarked content. Various ways are possible to realize the transmitting arrangement 110 and the receiving arrangement 130, with different advantages and possibilities. The arrangement 100 can be used to realize any present or future business model or application using the watermark as a means of reaching the consumer. This will be discussed below.

Figure 2 shows a second embodiment of the arrangement 100 according to the invention. There is a content provider 201, which has some piece of content that needs to be transmitted to a consumer. The content preferably comprises audio content, but may also comprise video content. The content provider 201 embeds extra information in the content by means of watermarking. The extra information can be anything, but will often be metadata or data related to copy protection. The content can be watermarked using any watermarking technique suitable for the type of content that is to be transmitted.

The content owner 201 then transmits the watermarked content to a distributing entity 202. The distributing entity 202 is responsible for distributing the content to the intended receivers, which may be anyone with a suitable receiving unit. The distributing entity 204 may optionally distribute the content only to subscribers or receivers who pay using a prepaid card or other mechanism.

To reach the intended receivers, the distributing entity 202 makes use of facilities offered by various network operators. Using a network operator, the content is transported over distribution network 203 to a receiving device 204, which for instance is a

settop box at a consumer's house, but can also be a public address system in any location. The receiving device 204 is arranged to play out the content over output device 205. To this end, the receiving device 204 produces signal 210, which is in the acoustical domain.

5 The consumer can choose to simply listen to the signal 210, but he may also want to make use of the extra information embedded in it. In that case, he simply has to use his portable receiver 220, such as his mobile phone, to receive the signal 210.

The portable receiver 220 decodes the watermark from the received signal 210 and processes the extra information contained therein. In some cases, only the portable receiver 220 is necessary at the consumer's end to realize the business model or application. 10 In other cases, the e-commerce server 240 may be required to provide extra facilities or computing power, since most portable receivers 220 will only have limited capabilities. The portable receiver 220 may optionally be assisted in detecting, decoding and/or processing by a supporting server 250, which can be in the mobile network 230 but may also be located in the user's home or at some other place.

15 The portable receiver 220 can communicate with an e-commerce server 240 using a network 230 of some kind. For instance, if the portable receiver 220 is a mobile phone, the network 230 is the mobile network coupled to a network such as the Internet, allowing the mobile phone to connect to servers such as server 240 on the Internet.

Using this arrangement, the content owner 201 can work out and realize any 20 present or future business model or application using the watermark as a means of reaching the consumer. The distributing entity 202 and the operator of network 203 are not required to do anything special. Thus, the arrangement according to the invention provides true disintermediation – it is no longer necessary to involve a distributor and a network operator to reach a consumer.

25 As an example business model, consider a content owner 201 who wishes to promote a movie. To this end, he produces a trailer, which is to be transmitted to consumers. Normally, a consumer who views the trailer and decides he wants to go see the movie then needs to access some information service to find out which cinemas show the movie and at which times. This information may be provided to the consumer by the distributor 202, for 30 instance as a Teletext page listing all available movies and starting times, or as a mention in a local television show or advertisement.

In accordance with the invention, the content owner 201 can embed the information in the audio portion of the trailer. The distributor 202 then distributes the trailer as usual, and when it is shown by the receiving device 204, the consumer can aim his mobile

phone 220 at the loudspeaker 205 to pick up the audio portion. The mobile phone 220 then detects the watermark and decodes the information embedded therein. It can then show an overview of cinemas and starting times on its display. Preferably, the mobile phone 220 knows which city the consumer lives in and filters the information prior to displaying it.

5 Alternatively, the audio portion of the trailer comprises a Uniform Resource Identifier (URI) identifying a Webpage on the Internet, which shows the overview of cinemas and starting times. The mobile phone 220 then detects the watermark, decodes the URL therefrom and retrieves the Webpage, for instance using the Wireless Application Protocol (WAP). By browsing the Webpage on his mobile phone 220, the consumer can then choose  
10 the right cinema and time.

Another example business model that can be realized using the invention is a scheme to promote the viewing of commercials. The content owner 201 can produce commercials with embedded watermarks which are to be presented to consumers. The extra information embedded in those watermarks is in this business model related to a prize contest  
15 of some sort. Consumers can then use their mobile phone 220 or other suitably equipped portable device to pick up the extra information to see if they have won a prize. The prize can be represented by an electronic code, which must be entered in an information system to determine if the consumer has won a prize.

The content owner 201 now embeds this electronic code in one particular  
20 commercial, to be broadcast at one particular time, and announces this fact without mentioning the exact time and place. Consumers who want to win the prize now have to watch all the commercials from this content owner 201 to try to detect the watermark with the electronic code. This greatly increases the brand exposure for the content owner 201 and stimulates the viewing of commercials in general.

**CLAIMS:**

1. An arrangement for distributing watermarked content to a receiver, comprising a content source (201) for embedding extra information in the content and making the watermarked content available, and a distributor (202) for distributing the watermarked content to a receiver (220).

5

2. An arrangement as claimed in claim 1, whereby the extra information is embedded by means of a watermark.

3. An arrangement as claimed in claim 1, whereby the receiver (220) is arranged  
10 to decode and process the extra information from the watermarked content.

**ABSTRACT:**

Disclosed is an arrangement for distributing watermarked content to a receiver, comprising a content source (201) for embedding extra information in the content and making the watermarked content available, and a distributor (202) for distributing the watermarked content to a receiver (220).

5

**Fig. 2**

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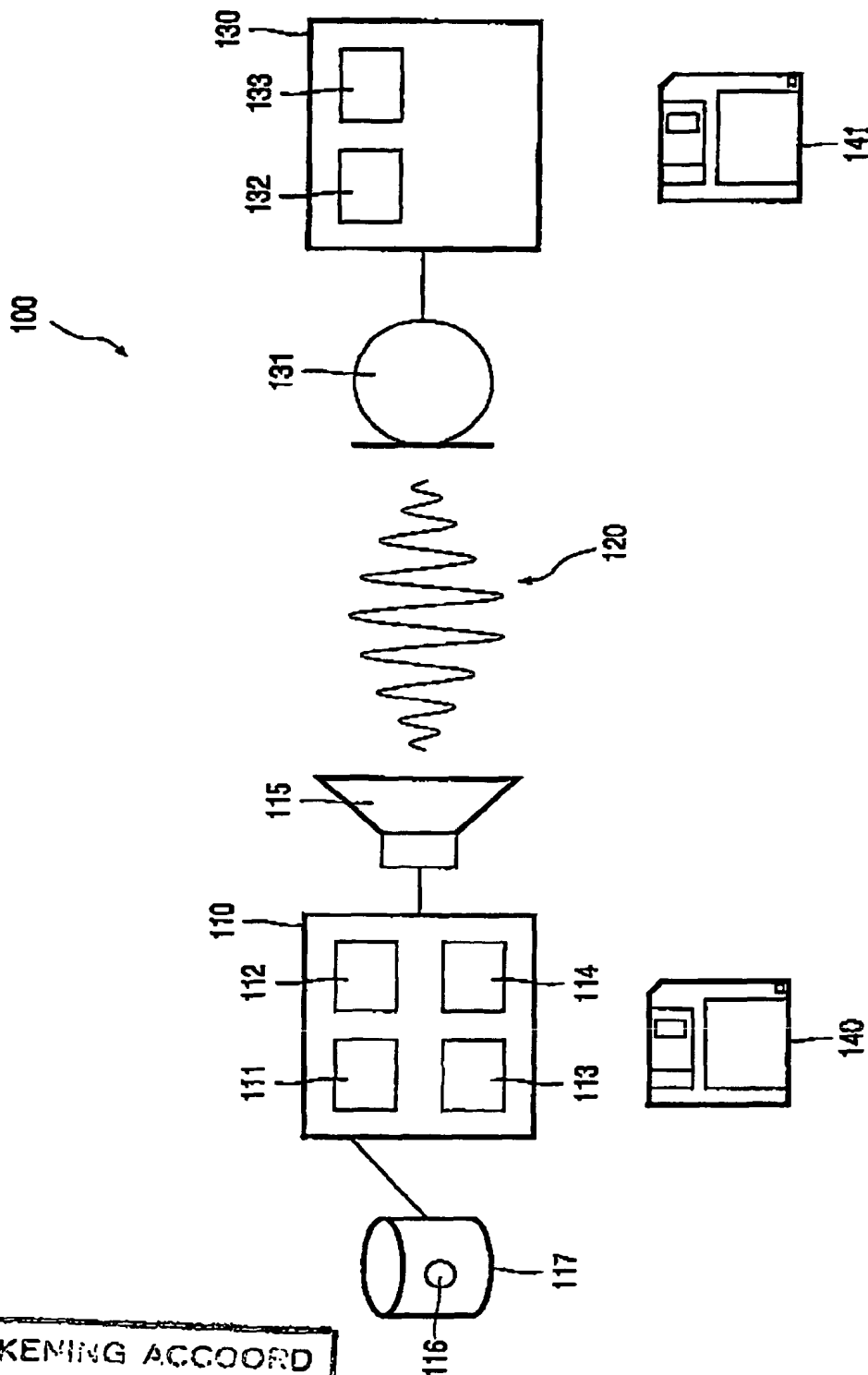


FIG. 1

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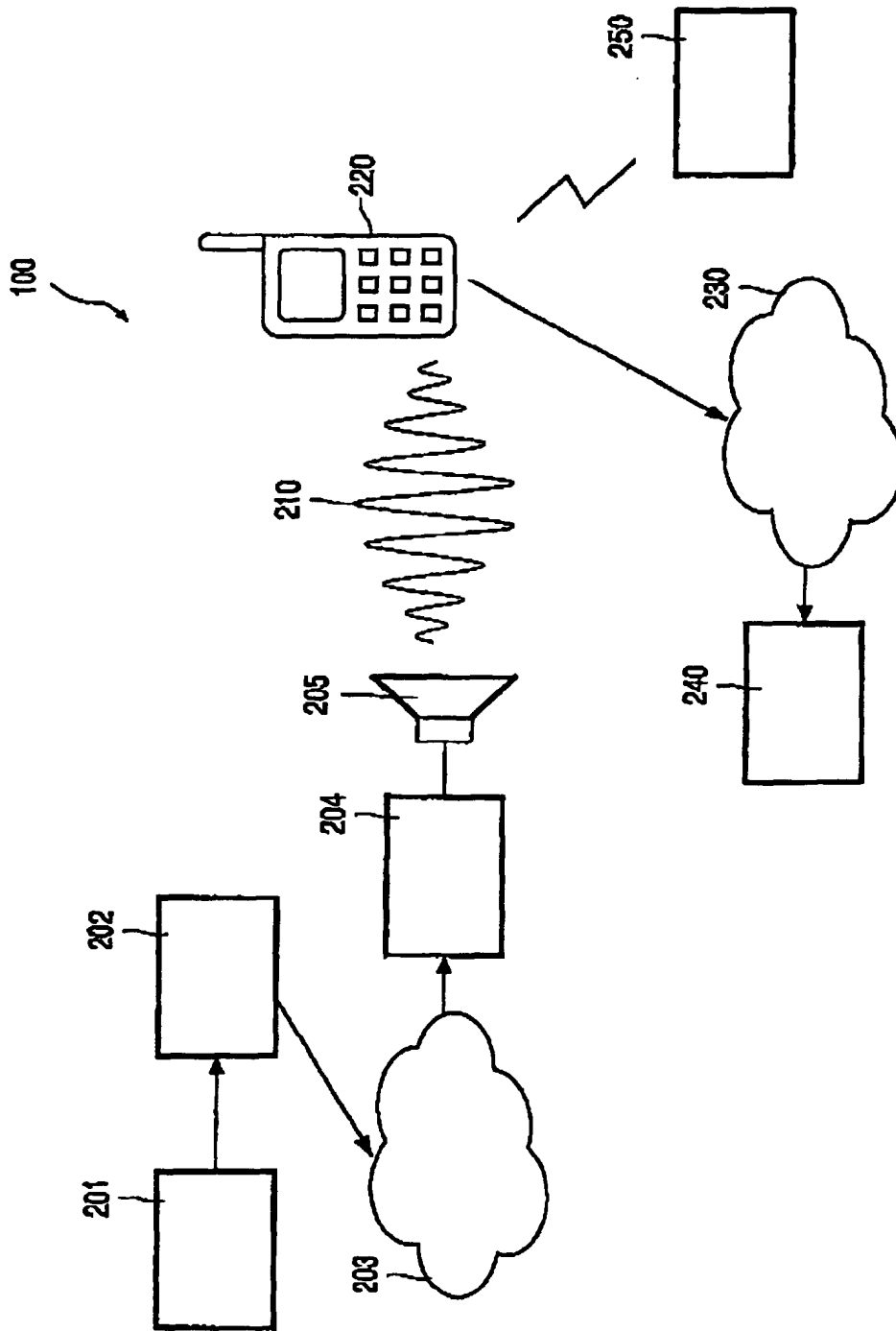


FIG. 2

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